



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2022-1313; Project Identifier MCAI-2021-01418-T; Amendment 39-22317; AD 2023-02-10]

RIN 2120-AA64

Airworthiness Directives; BAE Systems (Operations) Limited Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is superseding Airworthiness Directive (AD) 99-25-11 for certain BAE Systems (Operations) Limited Model BAe 146 and Avro 146-RJ series airplanes. AD 99-25-11 required repetitive inspections for cracks along the face of the retraction attachment boss in the nose landing gear (NLG) sidewall; and corrective action, if necessary. This AD was prompted by a report of a crack found on the left-hand sidewall well on the NLG, and by the determination that additional airplanes are subject to the identified unsafe condition. This AD continues to require the actions in AD 99-25-11, and expands the applicability. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain other publication listed in this AD as of February 1, 2000 (64 FR 72522, December 28, 1999).

ADDRESSES:

AD Docket: You may examine the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-1313; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the mandatory continuing airworthiness information (MCAI), any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

Material Incorporated by Reference:

- For service information identified in this final rule, contact BAE Systems (Operations) Limited, Customer Information Department, Prestwick International Airport, Ayrshire, KA9 2RW, Scotland, United Kingdom; phone: +44 1292 675207; fax: +44 1292 675704; email: RApublications@baesystems.com; website: regional-services.com.

- You may view this service information at the Airworthiness Products Section, Operational Safety Branch, FAA, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call (206) 231-3195. It is also available at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-1313.

FOR FURTHER INFORMATION CONTACT: Todd Thompson, Aerospace Engineer, Large Aircraft Section, International Validation Branch, FAA, 2200 South 216th St., Des Moines, WA 98198; phone: (206) 231-3228; email: Todd.Thompson@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 99-25-11, Amendment 39-11454 (64 FR 72522, December 28, 1999) (AD 99-25-11). AD 99-25-11 applied to certain BAE Systems (Operations) Limited Model BAe 146 and Avro 146-RJ series airplanes. AD 99-25-11 required repetitive eddy current inspections for cracks along the face of the retraction attachment boss in the NLG sidewall; and corrective action, if necessary. AD 99-25-11 was prompted by issuance of MCAI by a foreign civil aviation authority. The FAA issued AD 99-25-11 to address cracking along the face of the retraction attachment boss in the NLG sidewall, which could result in premature extension of the NLG or result in depressurization of the airplane.

FAA AD 99-25-11 corresponds to British AD 015-10-98.

The NPRM published in the *Federal Register* on October 31, 2022 (87 FR 65541). The NPRM was prompted by AD G-2021-0016R1, dated February 18, 2022 (U.K. CAA AD G-2021-0016R1) (also referred as the MCAI), issued by the Civil Aviation Authority, which is the aviation authority for the United Kingdom. U.K. CAA AD G-2021-0016R1 superseded European Union Aviation Safety Agency (EASA) AD 2007-0305, dated December 20, 2007, which superseded British AD 015-10-98. The FAA did not issue an AD corresponding to EASA AD 2007-0305. The MCAI states that evidence of cracking was found on several in-service airplanes in the bore and along the face of the retraction jack attachment boss on the left-hand NLG sidewall. Undetected cracking of the NLG sidewall could lead to explosive decompression of the fuselage near to the flightcrew (since the NLG sidewall forms part of the nose fuselage pressure shell), leading to significant structural damage to the airframe and/or incapacitation of the flightcrew.

The effectivity of each revision of Inspection Service Bulletin ISB.53-152 before Revision 8 was limited to airplanes that were not modified by torque tightening modification HCM01641A in production. BAE Systems (Operations) Limited has received reports of two airplanes with cracks at the NLG retraction jack attachment boss; those airplanes were post-modification HCM01641A and as such were not subject to the requirements of FAA AD 99-25-11. As a result of new findings and further analysis, BAE Systems (Operations) Limited issued Revision 8 of ISB.53-152, dated February 19, 2018, which extends the effectivity to all BAe 146 and Avro 146-RJ airplanes, except for airplanes post-modification HCM20011A, HCM20012A, HCM20013A, HCM20313A, HCM20314A, or HMC20315A.

Revisions prior to Revision 8 of ISB.53-152 included provisions for continued operation with certain crack conditions, which was also allowed in FAA AD 99-25-11 if approved as specified in paragraph (h)(1) of this AD. The U.K. CAA and the FAA have determined that continued operation with known cracks is not acceptable. Therefore, this AD does not allow flight with cracks.

You may examine the MCAI in the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-1313.

In the NPRM, the FAA proposed to continue to require the actions in AD 99-25-11 and expand the applicability.

Discussion of Final Airworthiness Directive

Comments

The FAA received no comments on the NPRM or on the determination of the costs.

Conclusion

This product has been approved by the aviation authority of another country and is approved for operation in the United States. Pursuant to the FAA's bilateral agreement

with this State of Design Authority, it has notified the FAA of the unsafe condition described in the MCAI referenced above. The FAA reviewed the relevant data and determined that air safety requires adopting this AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on this product. Except for minor editorial changes, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

Related Service Information under 1 CFR Part 51

The FAA reviewed BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-152, Revision 8, dated February 19, 2018. This service information describes procedures for repetitive eddy current inspections for cracking in the bore and along the face of the retraction attachment boss in the left-hand NLG sidewall, and repair or replacement of a cracked sidewall.

The FAA also reviewed British Aerospace Service Bulletin SB.53-152, dated October 8, 1998, which the Director of the Federal Register approved for incorporation by reference as of February 1, 2000 (64 FR 72522, December 28, 1999).

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

Costs of Compliance

The FAA estimates that this AD affects 20 airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

Estimated costs for required actions

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Retained actions from AD 99-25-11	1 work-hour X \$85 per hour = \$85 per inspection cycle	\$0	\$85 per inspection cycle	\$1,700 per inspection cycle

New proposed actions	2 work-hours X \$85 per hour = \$170	\$0	\$170 per inspection cycle	\$3,400 per inspection cycle
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The FAA has received no definitive data on which to base the cost estimates for the on-condition actions specified in this AD.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA’s authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency’s authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

The FAA has determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by:

a. Removing Airworthiness Directive 99-25-11, Amendment 39-11454 (64 FR 72522, December 28, 1999); and

b. Adding the following new airworthiness directive:

2023-02-10 BAE Systems (Operations) Limited: Amendment 39-22317; Docket No. FAA-2022-1313; Project Identifier MCAI-2021-01418-T.

(a) Effective Date

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD replaces AD 99-25-11, Amendment 39-11454 (64 FR 72522, December 28, 1999) (AD 99-25-11).

(c) Applicability

This AD applies to BAE Systems (Operations) Limited Model BAe 146-100A, -200A, and -300A airplanes; and Model Avro 146-RJ70A, 146-RJ85A, and 146-RJ100A airplanes; certificated in any category, without modification HCM20011A, HCM20012A, HCM20013A, HCM20313A, HCM20314A, or HMC20315A.

(d) Subject

Air Transport Association (ATA) of America Code 53, Fuselage.

(e) Reason

This AD was prompted by a report of a crack found on the left-hand sidewall well on the nose landing gear (NLG), and by the determination that additional airplanes are subject to the identified unsafe condition. We are issuing this AD to address cracking along the face of the retraction attachment boss in the NLG sidewall, which could result in premature extension of the NLG or result in depressurization of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Retained Repetitive Inspections, with New Terminating Action

This paragraph restates the requirements of paragraph (a) of AD 99-25-11, with new terminating action. For airplanes listed in British Aerospace Service Bulletin SB.53-152, dated October 8, 1998: Prior to the accumulation of 8,000 total flight cycles, or within 200 flight cycles after February 1, 2000 (the effective date of AD 99-25-11), whichever occurs later, perform an eddy current inspection to detect cracking along the face of the retraction attachment boss in the NLG sidewall, in accordance with British Aerospace Service Bulletin SB.53-152, dated October 8, 1998. Thereafter, repeat the eddy current inspection at intervals not to exceed 2,600 flight cycles, except as provided in paragraph (j) of this AD.

(h) Retained Repair, with Revised Repair Approval

This paragraph restates the requirements of paragraph (b) of AD 99-25-11, with revised repair approval.

(1) If any crack is detected before the effective date of this AD, during any inspection required by paragraph (g) of this AD, prior to further flight, repair or re-inspect in accordance with a method approved by either the Manager, International

Branch, ANM-116, FAA, Transport Airplane Directorate; or the Civil Aviation Authority (or its delegated agent). For a repair method to be approved by the Manager, International Branch, as required by this paragraph, the Manager's approval letter must specifically reference this AD.

(2) If any crack is detected on or after the effective date of this AD during any inspection required by paragraph (g) of this AD: Before further flight, either repair using a method approved by the Manager, International Validation Branch, FAA; or the U.K. Civil Aviation Authority (U.K. CAA); or BAE Systems (Operations) Limited's U.K. CAA Design Organization Approval (DOA); or do the replacement specified in paragraph (i) of this AD. If approved by the DOA, the approval must include the DOA-authorized signature.

(i) New Requirements: Repetitive Inspections and Corrective Actions

(1) For all airplanes: Before the accumulation of 7,375 total flight cycles, or within 625 flight cycles after the effective date of this AD, or within 2,600 flight cycles since the most recent inspection required by paragraph (g) of this AD, whichever occurs latest, do an eddy current inspection for cracking in the bore and along the face of the retraction jack attachment boss in the left-hand NLG sidewall, in accordance with the Accomplishment Instructions of BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-152, Revision 8, dated February 19, 2018. Before further flight, repair or replace any cracked sidewall, as applicable, in accordance with BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-152, Revision 8, dated February 19, 2018. Repeat the inspection thereafter at intervals not to exceed 6,700 flight cycles, except as provided in paragraphs (i)(1)(i) and (ii) of this AD.

(i) For airplanes on which a repair identified for Option A, D, or E in Table 1 of BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-152, Revision 8,

dated February 19, 2018, has been done: Inspect within 20,000 flight cycles after the repair, and repeat thereafter at intervals not to exceed 4,000 flight cycles.

(ii) For airplanes on which the replacement with part number HC537L0002-000, -002, or -004 identified in Option F in Table 1 of BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-52, Revision 8, dated February 19, 2018, has been done: Inspect within 20,000 flight cycles after the repair, and repeat thereafter at intervals not to exceed 4,000 flight cycles.

(2) For airplanes on which re-inspection of cracks was allowed as specified in paragraph (h)(1) of this AD: Within 2,600 flight cycles after the most recent inspection required by paragraph (g) of this AD, repair or replace any cracked sidewall, as applicable, in accordance with BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-152, Revision 8, dated February 19, 2018.

(j) Terminating Action

(1) Accomplishment of the initial inspection and applicable corrective actions required by paragraph (i) of this AD terminates the repetitive inspection requirements of paragraph (g) of this AD.

(2) Accomplishment of the action identified for Option B or C in Table 1 of BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-152, Revision 8, dated February 19, 2018, terminates the repetitive inspection requirements of paragraphs (g) and (i)(1) of this AD.

(3) Accomplishment of the replacement with part number HC537L0002-006 identified for Option F in Table 1 of BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-152, Revision 8, dated February 19, 2018, terminates the repetitive inspection requirements of paragraphs (g) and (i)(1) of this AD.

(k) Credit for Previous Actions

(1) This paragraph provides credit for actions required by paragraphs (i) and (j)(2) of this AD, if those actions were performed before the effective date of this AD using the service information identified in paragraphs (k)(1)(i) and (ii) of this AD.

(i) BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-152, Revision 6, dated March 5, 2014.

(ii) BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-152, Revision 7, dated May 7, 2014.

(2) This paragraph provides credit for the actions required by paragraph (j)(3) of this AD, if those actions were performed before the effective date of this AD using the service information identified in paragraphs (k)(2)(i) and (ii) of this AD, provided the sidewall replacement for Option F was part number HC537L0002-006.

(i) BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-152, Revision 6, dated March 5, 2014.

(ii) BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-152, Revision 7, dated May 7, 2014.

(l) No Reporting Requirement

Although BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-152, Revision 8, dated February 19, 2018, specifies to submit certain information to the manufacturer, this AD does not include that requirement.

(m) Other FAA AD Provisions

(1) Alternative Methods of Compliance (AMOCs): The Manager, International Validation Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the International Validation Branch, send it

to the attention of the person identified in paragraph (n)(2) of this AD. Information may be emailed to: 9-AVS-AIR-730-AMOC@faa.gov. Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(2) Contacting the Manufacturer: As of the effective date of this AD, for any requirement in this AD to obtain instructions from a manufacturer, the instructions must be accomplished using a method approved by the Manager, International Validation Branch, FAA; or the U.K. CAA; or BAE Systems (Operations) Limited's U.K. CAA DOA. If approved by the DOA, the approval must include the DOA-authorized signature.

(n) Additional Information

(1) Refer to Civil Aviation Authority (United Kingdom) AD G-2021-0016, dated December 17, 2021, for related information. This U.K. CAA AD may be found in the AD docket at regulations.gov under Docket No. FAA-2022-1313.

(2) For more information about this AD, contact Todd Thompson, Aerospace Engineer, Large Aircraft Section, International Validation Branch, FAA, 2200 South 216th St., Des Moines, WA 98198; phone: (206) 231-3228; email: Todd.Thompson@faa.gov.

(3) Service information identified in this AD that is not incorporated by reference is available at the addresses specified in paragraphs (o)(5) and (6) of this AD.

(o) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(3) The following service information was approved for IBR on [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(i) BAE Systems (Operations) Limited Inspection Service Bulletin ISB.53-152, Revision 8, dated February 19, 2018.

(ii) [Reserved]

(4) The following service information was approved for IBR on February 1, 2000 (64 FR 72522, December 28, 1999).

(i) British Aerospace Service Bulletin SB.53-152, dated October 8, 1998.

(ii) [Reserved]

(5) For service information identified in this AD, contact BAE Systems (Operations) Limited, Customer Information Department, Prestwick International Airport, Ayrshire, KA9 2RW, Scotland, United Kingdom; phone: +44 1292 675207; fax: +44 1292 675704; email: RApublications@baesystems.com; website regional-services.com.

(6) You may view this service information at FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call (206) 231-3195.

(7) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email: fr.inspection@nara.gov, or go to: www.archives.gov/federal-register/cfr/ibr-locations.html.

Issued on January 24, 2023.

Christina Underwood, Acting Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.
[FR Doc. 2023-02783 Filed: 2/9/2023 8:45 am; Publication Date: 2/10/2023]